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Wind map of the Czech Republic

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The new wind map of the Czech Republic was calculated in order to assess the wind energy potential. It was constructed as a combination of three distinct methods: the statistical model VAS, the model WAsP and the model PIAP.

VAS is a statistical method based on 3D interpolation between available measurement sites. WAsP is a model and program designed for applications in wind energy. It is capable to make a detailed calculation near the selected point (measurement site or wind turbine) that includes an influence of roughness changes, orography and local obstacles. PIAP represents a model of boundary atmospheric layer developed for simulation of flow over hilly landscape.

At first, the WAsP and VAS models were combined into the hybrid model. It consists of three steps: 1) the WAsP model was applied to calculate the "Regional wind climates" from the wind measurements, 2) the "Regional wind climates" were interpolated by VAS, 3) the interpolated data were downscaled by WAsP into a grid of 100 m resolution.

The hybrid model VAS/WAsP had already been applied to produce the previous wind map of the Czech Republic. In the recent version, the database has been expanded and handled with more refined care. Besides the standard meteorological stations it includes a set of mast measurements and the wind measurements obtained in the network of air pollution monitoring stations.

Independently, the flow model PIAP was calculated in 600 m resolution over the area of the Czech Republic. The results of PIAP and VAS/WAsP models were combined to make the final result. The final map is presented for the height of 100 m above ground, which is regarded as a most representative in wind energy applications.